

Confirmation No. 4536

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	VENEZIA <i>et al.</i>	Examiner:	Singal, Ankush
Serial No.:	10/539,224	Group Art Unit:	2895
Filed:	June 16, 2005	Docket No.:	BE020043US1 (NXPS.273PA)
Title:	METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE OBTAINED WITH SUCH A METHOD		

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**REPLY BRIEF**

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Commissioner For Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

<b>Customer No. 65913</b>
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Dear Sir:

This is a Reply Brief submitted pursuant to 37 C.F.R. § 41.41(a)(1) for the above-referenced patent application. This Reply Brief is submitted in response to the Examiner's Answer dated January 11, 2010.

Authorization is given to charge/credit **Deposit Account 50-4019 (BE020043US1)** all required fees/overages to enter this paper.

**I. Status of Claims**

Claims 1-10 stand rejected and are presented for appeal.

**II. Grounds of Rejection**

The grounds of rejection to be reviewed on appeal are as follows:

- A. Claims 1-2 and 10 stand rejected under 35 U.S.C. § 102(b) over the Wang reference (U.S. Patent No. 6,074,922).
- B. Claims 3-7 and 9 stand rejected under 35 U.S.C. § 103(a) over the Wang reference in view of the Hashimoto reference (U.S. Patent Pub. 2001/0003056).
- C. Claim 8 stands rejected under 35 U.S.C. § 103(a) over the Wang reference in view of the Wu reference (U.S. Patent No. 6,348,390).

**III. Appellant's Reply Argument**

Appellant's Reply Brief does not replace the Appeal Brief and the arguments presented therein. The Reply Brief is intended to supplement the Appeal Brief, and the arguments of the Appeal Brief still apply.

The Examiner's Answer represents a first attempt at clearly articulating the rationale behind the rejection; however, it fails to address the problems of the rejection put forth in Appellant's Appeal Brief.

**A. The Examiner's Reply Does Not Address Appellant's Arguments Regarding Lack of Correspondence.**

The Examiner's Answer explains the general understanding of silicide formation, but adds nothing of substance to the record. Appellant has never disputed that the '922 reference teaches formation of a silicide by combining metal with a portion of the semiconductor material. Accordingly, the content of the Examiner's Answer is largely irrelevant to the lack of correspondence. To facilitate the Board's review, Appellant presents the following brief explanation, while noting that further details can be found in the underlying Appeal Brief.

The claim limitations are directed toward formation of the compound from at least a fairly large and significant portion (*i.e.*, the plain meaning of the term "substantial") of the

semiconductor material. The plain meaning of the term substantial is not met simply because some portion, however minor, is used.

Accordingly, the Examiner's Answer does nothing to address Appellant's arguments regarding such limitations. While some minor portion of the silicon region of the '922 reference would combine with the thin metal layer, there is no evidence that the resulting layer is formed from a fairly large and significant portion of the relevant region. Moreover, the references teach that such aspects are undesirable (*see, e.g.*, section B below, which explains that the '922 reference seeks an increased thickness for the polysilicon region). The '922 reference has not been shown to expressly teach such limitations and the Examiner has not shown that such limitations are implicit or inherent to the teachings of the '922 reference. Moreover, a review of the relevant figures of the '922 reference (as reproduced in Appellant's Appeal Brief) and the related passages of the '922 reference suggests just the opposite. Accordingly, there is not sufficient evidence to maintain a rejection under 35 U.S.C. § 102(b).

**B. The Examiner's Answer Does Not Address The Lack Of Motivation Or That The Proposed Modification Would Impermissibly Undermine the Principle Teachings of the Primary Reference.**

The Examiner's Answer fails to address Appellant's showing that the proposed modification undermines a stated goal of the primary reference. As explained in the Examiner's Answer, the proposed modification is purported to completely remove the polysilicon region. The stated reason for implementing the relied upon method of the primary '922 reference is to increase the thickness of the polysilicon region. The rejection is therefore *prima facie* invalid.

**C. The New Grounds of Rejection Presented In The Examiner's Answer Are Illogical.**

The Examiner presents a new hypothetical combination drawing from embodiments that have not yet been relied upon. This newly articulated combination begins with FIG. 8 of the '922 reference and modifies this by the process of the secondary '056 reference. This new interpretation is illogical. To reach the state of the device of FIG. 8, all metal that has

not been combined with the polysilicon is removed. "The remaining unreacted titanium 40 can then be etched away using, for example,  $\text{NH}_4\text{OH}/\text{H}_2\text{O}_2$  with dionized water. The resulting structure is illustrated in FIG. 8" '922 reference, Col. 4:5-7. Thus, no amount of further heating would consume the entire gate because there is no unreacted metal left to react therewith. Accordingly, the rejection is invalid because it relies upon an illogical and technically incorrect conclusion.

**D.     The Examiner's Answer Does Not Address the Lack of Reason to Support the Legal Conclusion of Obviousness.**

The Examiner's Answer fails to address the undisputed evidence that the proposed reason for modification is to solve a non-existent problem. In essence the rejection is improper because, to the extent that the secondary reference seeks to extend the drain and source region, the primary '922 reference would not benefit as it already provides the equivalent to such extension. The Examiner's Answer provides no insight as to why the rejection is maintained as it says nothing more than the secondary '390 reference removes its spacers to provide extended source/drain regions. Since the '922 reference teaches a process that does not appear to suffer from the problems of the secondary '390 reference, and the Examiner presents no evidence or explanation to the contrary, there is insufficient evidence to maintain the rejection.

**IV. Conclusion**

In view of the above, and the underlying Appeal Brief, Appellant submits that the rejections of claims 1-10 are improper and therefore requests reversal of the rejections as applied to the appealed claims and allowance of the entire application.

*Please direct all correspondence to:*

Corporate Patent Counsel  
NXP Intellectual Property & Standards  
1109 McKay Drive; Mail Stop SJ41  
San Jose, CA 95131

CUSTOMER NO. 65913

By: 

Robert J. Crawford  
Reg. No.: 32,122  
Shane O. Sondreal  
Reg. No.: 60,145  
651-686-6633  
(NXPS.273PA)